

Invasive Species Answer Key

Station 1

1. Thousand cankers disease
2. Black walnut trees
3. A fungus (*Geosmithia morbida*)
4. Walnut twig beetle
5. Do not transport walnut logs or firewood

Station 2

6. Glassy-Winged Sharpshooter
7. Pierce's disease of grapevines
8. Grapes, citrus trees, almonds, stone fruits (peach, nectarines, mangos, plums, apricots), Alfalfa
9. Parasitic wasps
10. Parasitic wasps seek out sharpshooter eggs and lay their own eggs inside them. The developing wasps eat the contents of sharpshooter eggs before pupating and then chew circular holes through the sharpshooter eggshell to get out and disperse. In this way egg parasites can effectively reduce the number of sharpshooters that emerge

Station 3

11. Clubbed Tunicate (*Styela clava*)
12. On the hulls of ships, ballast water or with imported oysters
13. 8-15 cm (3-6 in)

14. There are two openings at *Styela clava*'s head end, at the ends of short tubes called siphons. *Styela clava* pumps water in through one opening, called the oral aperture, strains out food particles (tiny organisms and detritus), and then pumps the water out through the other opening, the atrial aperture.
15. Like all sea squirts, it is hermaphroditic, but its male and female gonads mature at different times so it is not self-fertile.

Station 4

16. Medusahead (*Taeniatherum caput-medusae*)
17. California, Oregon, Washington, Idaho.
18. As the plant matures it develops long barbed awns that can cause injury to the eyes, noses, and mouths of grazing animals.
19. Wildfires. Medusahead has a fine structure and its herbage dries completely; therefore, its standing dead biomass is extremely flammable. The hazard of wildfire is further increased by considerable litter. Medusahead litter decomposes more slowly than that of most plants, therefore making stands of this annual grass a fire hazard.
20. Grazing, burning, mechanical manipulation, herbicide, native species reseeding

Station 5

21. Rock snot
22. Global warming
23. There are currently no known methods for controlling or eradicating didymo once it infests a water body.
24. Humans with felt soles
25. During blooms, these mats cover stream beds, and choking out many of the organisms that live on the stream bottom, which can affect trout and other fish by limiting their food.

Station 6

26. Dutch Elm disease, caused by *Ophiostoma*
27. Bark beetles

- 28. Once the fungus is in the bark of the tree, the tree will try and prevent the fungi from spreading by sending a substance that clogs the vascular tissue tubes that send nutrients up the tree. Eventually the fungi becomes so spread out that the tree clogs all of its own vascular tissue tubes and dies.
- 29. Adult beetles tunnel into bark and lay eggs. Beetle eggs hatch and larvae feed on the inner bark forming tunnels
- 30. Roots of the same or closely related tree species growing near each other often cross each other in the soil and eventually fuse (become grafted) to each other. The DED fungus can move from infected trees to adjacent trees through these grafted roots.

Station 7

- 31. Biting midges (Culicoides)
- 32. Bluetongue virus is an arbovirus that has evolved a life cycle where alternate cycles of virus replication in vertebrate and invertebrate hosts are essential for virus persistence
- 33. There are numerous serotypes of bluetongue virus, and new ones being introduced, so vaccination is unlikely to stop the transmission of all bluetongue virus since vaccinations are developed for specific strains
- 34. Ruminants are mammals that acquire nutrients from plant-based food by fermenting it in a specialized stomach prior to digestion, principally through microbial actions. The process typically requires the fermented ingesta (known as cud) to be regurgitated and chewed again. The process of rechewing the cud to further break down plant matter and stimulate digestion is called rumination.
- 35. The recent “global warming” has allowed for longer activity of biting midges and thus longer periods during which they are capable of BTV transmission. Bluetongue is difficult to control once it has been transmitted to its vectors. It spreads rapidly and can easily cross international borders and already has caused widespread epidemic in Europe causing severe economic impact to the farming industry.

Station 8

- 36. Parrot feather (*Myriophyllum aquaticum*)
- 37. Commonly sold for aquaria and aquatic gardens, it has escaped to become invasive in ponds and other calm water bodies in this region.
- 38. It can form dense mats and compete with native aquatic plants, especially in shallow ponds. It also provides habitat for mosquito larvae, impedes boats and clogs drainage ditches.

39. Early Detection and Rapid Response (EDDR) program in combination with the Midwest Invasive Species Information Network helps in detecting new invaders and responding to threats immediately which provide the best results in combating invasive species.
40. If a species is prohibited or restricted, it is unlawful and illegal to possess, introduce, import, sell or offer that species for sale as a live organism, except under certain circumstances.

Station 9

41. Purple loosestrife
42. Tree of Heaven
43. Multiflora Rose
44. Giant Reed grass
45. Japanese Honeysuckle

Station 10

46. Silver carp (*Hypophthalmichthys molitrix*)
47. 60 pounds and 3 feet
48. The silver carp is skittish and easily startled by the sound of a boat motor. The sound can cause the fish to leap as high as ten feet out of the water, earning them the nickname "the flying fish." Some of these fish weigh more than twenty pounds. They land in boats, damage property, and injure people.
49. They were imported into the U.S. to remove algae and suspended matter out of catfish farm ponds and wastewater treatment ponds. It is widely believed during large flood events in the mid-1990s, some of the farm ponds overflowed their banks and they were released into local waterways in the Mississippi River Basin.
50. These species are large, filter-feeding fish capable of consuming vast quantities of microscopic plants and animals daily, highly prolific producing up to 1 million eggs and have the potential to disrupt the Great Lakes food chain, reducing the population of other native fishes.